

Cotton Patch Bayou Release 2007
CO GST Log Entries and Documentation

Thursday September 6, 2007

1630 – Received a call from Captain Diehl, Sector Commander, regarding the situation.

1800 – Departed GST for Houston, TX with BM1 Davis.

Note: See attached for initial Agrifos meeting minutes and initial correspondence with Ardaman Associates on emergency situation.

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Friday September 7, 2007

0750 – Arrived at Sector to meet with Sector personnel. Proceeded to the Agrifos facility for site overview and familiarization.

1030 – met with Agrifos personnel. Agrifos reported that they have contracted with OOPS to manage the incident and that they would be providing a Deputy IC and Planning Section Chief initially and possibly more personnel if needed. Current situation is extremely serious; EPA OSC, Chris Ruhl also on scene. Discharge of wastewater from one 8” line into county drainage ditch that feeds into Cotton Patch Bayou continues until structural integrity of the South Stack moat wall can be evaluated by engineers. Agrifos is putting Soda Ash in the ditch at the discharge location to try to do gross pre-treatment but pH levels are very low (~2) at discharge site. Primary concern of Agrifos is stack integrity – loss of stack wall could result in catastrophic release of Approximately 120 million gallons of pH2 wastewater. Reduction by approximately 35 million gallons would alleviate immediate crisis by providing some surge capacity within the stack-moat-facility system.

Objectives set at the meeting: a) assess structural integrity of the South Stack moat wall that has failed before and continues to have significant leak issues. CG FOSC wants to tell Agrifos to stop discharging but wants to know risk associated with potential wall failure (25 million gallons are contained in South Stack moat); CG/EPA required Agrifos to hire an engineer to assess the wall and EPA is bringing in an ACOE engineer to do an independent assessment; b) draft a written Site Safety Plan (SSP); c) develop a plan for pretreatment of water before it is released; d) continue sampling (Harris County has lead).

1815 – tactics meeting held; SSP work continues – Agrifos IH has lead but GST providing assistance (not familiar with ICS Form/requirement).

2015 – planning meeting held to go over initial IAP (see attached). GST focus for 8 September will be to work on immediate storage issues and continue; assist with SSP; continue to document situation and provide recommendations to Unified Command (UC).

Note: After discussing engineering opinions on status of the South Stack Moat wall (that wall would not fail in current condition); UC determined to secure discharge from 8” line, ending intentional/controlled discharge into Cotton Patch Bayou (I’m uncertain of actual time that the line was secured – it was either late the 7th or early on the 8th but the decision was made by the UC to secure the line).

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Saturday September 8 2007

0800 – UC Meeting; reviewed IAP.

1030 – 1330 led Storage Work Group (SWG) formed to develop alternatives for immediate storage of untreated wastewater. SWG examined all areas on Agrifos property as well as all adjacent facilities and surrounding areas to identify alternatives to pump wastewater to in an emergency. SWG determined that untreated wastewater limits options to the extreme. Work Group findings are attached. During the SWG discussion, I learned that Stack #4 pond and moat wastewater were being managed by Agrifos for Exxon-Mobil and that Stack #4 pond and moat were being “managed” by pumping to the South Stack moat; Stack #4 moat contains 10 million gallons of wastewater – both the pond and moat are also overfull.

1330 -1500 summarized SWG findings in written report for inclusion in IAP.

~1600 – Planning Meeting to review IAP for next operational period. Work on storage options will shift from untreated storage to developing options for treating and disposal of wastewater via most expedient means.

Note: CG/EPA OSCs requested water balance information to understand and track actual levels in each pond and moat that is part of the overall problem. Agrifos does not have water level monitoring equipment on any ponds or moats.

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Sunday September 9, 2007

0800 – OPS Meeting – Agrifos presented first water balance worksheet to begin understanding water levels throughout waste water system. MSTC Tilimon met w/Agrifos to refine water balance worksheet to give UC “big picture.” Agrifos continues to work on IAP objectives and place measurement devices on ponds and moats to get consistent, verifiable readings. See attached water balance sheet dated 9/9/07.

0930 – UC Meeting; CG/EPA OSCs requested written risk assessment from Aradaman on water levels in ponds and moats and their opinion on “events” that would cause catastrophic failure of the stacks. Ardaman will be on-scene Monday.

Other issues discussed:

- a) Exxon-Mobil’s role in Stack Four – are they an RP or not? Recommended to MSTC Tilimon that Sector issue a NOFI to Exxon-Mobil as a PRP until the exact relationship between Agrifos and Exxon-Mobil is ascertained.
- b) Limited options for storage of untreated wastewater – discussion shifted to off-site options (e.g., Gulf Coast, etc.); transportation and logistical issues with several options were discussed (barge, pipeline, rail car). Are there other deep injection wells (besides the Exxon-Mobil well being developed for Stack 4), other TSDFs that can be used?
- c) pH adjustment on-site – what locations can be used? Moat at South Stack? (No, this disrupts processing plant which also consumes waste). Moat at Stack #4? (No, this moat is tied into the South Stack). Moat #1? (No this is used to treated slightly contaminated ground water that is put through the plant’s treatment system).

1300 – Meeting with Vice President of Agrifos to review financial status of the company and the contractual relationship with Exxon-Mobil for stack closure. See attached Agrifos Financial Summary.

1400 – Agrifos met with Gulf Coast Waste Disposal to discuss the option of using their plant to process wastewater.

1630 – Telcon with Exxon-Mobil representatives (Mr. Buddy Hand; Mr. Len Rasiope; Mr. Craig Oural - Terra) to discuss their participation in this emergency.

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Monday September 10, 2007

0800 - Ops Briefing – work continues on wall maintenance and repair; work continues on all other fronts to solve treatment and disposal problems.

0820 – Water balance meeting – see attached sheet; need at least one million gallons shipped off-site per day to make a difference. This is in addition to the 800k gallon usage/day by the plant and another 600k in natural evaporation. Ideally, 3-5 million gallons/day need to be transported and disposed of but significant hurdles remain. Gulf Coast Waste Water Option: cannot take raw process water (their “bugs” would die); limiting factor besides the bugs is Fluorides (would exceed their own permit); Gulf Coast is examining the possibility of taking partially treated water; could take 1-2 million gallons/day; transportation to Gulf Coast also remains a challenge but could use the Air Products pipeline, barges or tank trucks.

Discussion also covered other options, such as treating wastewater and making it into a low grade fertilizer. The limiting factor to all options requiring treatment is Agrifos’ treatment plant capacity and capability (it’s not designed to handle the raw wastewater). Each option will have to be weighed since Agrifos cannot do them all with their current plant. Goal is to reduce waste water as quickly as possible with maximum treatment possible while other options are pursued.

1200 – CG/EPA OSCs held initial RRT meeting at Sector to brief everyone on current situation and to prepare RRT for potential future decisions/actions.

1400 – Technical Expert Briefing – Ardaman Associates briefed agency personnel on their findings: 1) Stack situation is critical; must reduce pond levels to 24” freeboard; moat condition is also critical – erosion seepage could cause another wall failure because moat walls are not designed to hold high water continuously. Need capacity to withstand 10” rainfall event and 30 mph which currently do not have either. A 50mph wind WILL cause stack failure on the South Stack due to overtopping and erosion. Ardaman reiterated that controlled release from predicted point was much better than an unpredictable, large scale uncontrolled release. CO GST requested written summary of risk for OSCs; 2) Jones West Area was ruled out for storage of untreated wastewater because low pH would release otherwise contained heavy metals in the dredge spoils to who knows where. Even though this area has been surveyed and evaluated for an additional gypsum stack and lined storage pond, using it unlined was not recommended by the engineers.

1600 – Planning Meeting; IAP briefed to agency personnel.

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Tuesday September 11, 2007

0800 – Ops/UC Meeting to discuss scheduled operations and update objectives.

0900 – Meeting with gypsum stack experts (Ardaman & Associates) to review memorandum issued late on the 10th regarding the condition of the gypsum stacks and their ability to withstand additional rain and wind events. CO GST recommended to CG/EPA OSCs to draft letter to Agrifos and Exxon-Mobil giving them guidance on actions to take to mitigate disaster/stack failure. CO GST and Sector Response Department head drafted letter for CG/EPA and Texas to sign jointly.

1330 – CG/EPA OSCs held second RRT meeting to discuss way forward to mitigate crisis, including issuing Agrifos a letter that outlines their responsibilities; much discussion ensued about options; Exxon-Mobil's role; the deep injection well permit status as well as other regulatory (e.g., RCRA) issues. CG OSC informed RRT that EPA should have lead for the facility as per a signed MOA. CG/EPA OSCs reiterated lack of options (other than controlled, untreated release to county ditch) at this time to prevent catastrophic failure of stacks. Daily 1-2 inch showers have not helped situation.

Worsening weather picture – potential tropical storm forming quickly added a significant amount of concern to the OSCs and other responders on scene.

~1600 – CG OSC requested GST chemical pumpload.

2000 - Coast Guard issued letter to Agrifos and Exxon-Mobil to prevent failure of stacks.

Note: EPA and Texas did not get approval in time, so CG issued the letter. Copy of the letter is attached.

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Wednesday September 12, 2007

0700 hrs, 12 Sept. 2007 (Wed.). Based on a briefing at the Unified Command meeting by a local National Weather Service forecaster, numerous showers and thunderstorms were expected in the region for 12 Sept. Rainfall amounts were forecasted near 1 inch, with isolate accumulations of 3 to 4 inches. The chance of rain was expected to continue through 13 Sept. (Thur.) with additional rain fall of 2 to 6 inches possible.

0700 – GST Chemical Pumpload departed GST for Sector Houston.

0800 – UC meeting. NWS weather briefing indicated 1-3” rain for 12th with 6-7” over next three days. Winds estimated to be 15-20 kts from the east.

Wastewater level update given at meeting: #4 Stack leaks increased – discharging to Moat 4 but there is no evidence of gypsum in the leaks; need to reduce head pressure in the pond; an additional pump was added to the pond to reduce the level. Stack #4 appears stable but they do not want to overtop the pond. Pumping to Moat #1 continues. IMMEDIATE priorities remain: 1) Get and maintain 12” freeboard in all ponds asap; 2) Keep level in Moat #4 from overflowing; 3) Keep Moat #3 wall from failing – there is currently only 2” freeboard before overflow. Agrifos has increased monitoring to hourly on Stack #3 with constant visual inspection of the wall (roaming patrol). RP (Mr. Tim Cotton) stated that Agrifos would not intentionally pump without assurance that it would be considered criminal; they do not want to knowingly violate the law (at this point). So their strategy is to let the moats overflow rather than pump.

0900 hrs, 12 Sept. 2007. The local National Weather Service forecaster, who had just left the meeting, called the NOAA Scientific Support Coordinator to report that the disturbance in the Gulf of Mexico would soon be upgraded to a tropic depression that would threaten the area within 24 hours.

1000 – RRT meeting at Sector; Coast Guard and EPA OSCs reiterated the seriousness/criticality of current situation – facility has NO SURGE capacity at this time – without active pumping of wastewater from the top ponds and moats, catastrophic failure of the stack(s) could occur. Weather update indicated that the tropical depression is being upgraded to a tropical storm, projected to land just west of Galveston with rain estimates of 10-15 inches in heavy bands with 30-45mph winds. EPA working to issue Agrifos a written CERCLA Order to set limitations on managing the wastewater. Some discussion ensued about which agency (CG or EPA) has lead. Captain Diehl stated that he thought EPA was lead for facility operations based on a CG-EPA MOA.

1000 hrs, 12 Sept. 2007. A Tropical Storm Warning was issued by the National Weather Service. The 1000 hrs forecast predicted that the storm would intensify to a Tropical Storm and the center of the storm would reach the Agrifos Facility at 0700 hrs, 13 Sept. Sustained tropical force winds were predicted and rainfall of 5 to 10 inches with accumulations of 15 inches was possible. The storm track, at this time, had the facility on the NE quadrant of the storm center, or on the quadrant that would receive the greatest rainfall amount, strongest winds, and possible tornados.

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1130 – Meeting with Garner Services at Sector to discuss their capability to assist the situation.

1200 – Telcon between EXXON-MOBIL, D8 legal, and EPA/CG responders to discuss EXXON-MOBIL's role/responsibility in the ongoing incident. Deep Injection Well issues were also discussed. Key parties were identified and links made to discuss issues further outside of the ongoing response.

1300 hrs, 12 Sept. 2007. A Tropical Storm Warning remained in effect. The 1300 hrs report stated that the depression had intensified into Tropical Storm Humberto, and the center of the storm would still reach the Agrifos Facility at 0700 hrs, 13 Sept. Sustained tropical force winds were predicted and rainfall of 5 to 10 inches with accumulations of 15 inches was possible. The storm track, at this time, had the facility on the direct path of the storm's center. Winds had intensified to 45 mph and intensification was expected. Storm surge was also expected to push tides 2 feet above normal tides for the upper Houston Ship Channel.

1500 – Planning meeting & UC meeting to discuss strategy for dealing with fast developing/moving Tropical Storm Humberto. Crisis objectives were discussed and set:

- Health and safety of personnel (with approaching tropical storm)

- Manage the wastewater to prevent catastrophic release of stacks. Priority is a) maintain integrity of Stack 4 and South Stack – RP is pumping and siphoning from top moats to gain freeboard to be able to keep integrity intact.

- Notification of immediate neighbors of situation

- Mitigate environmental damage

- Assess and monitor environmental damage

- Continue to identify sound disposal options for transportation, storage and disposal of wastewater (treated or untreated)

- Establish claims process

RP reported that notification to neighboring facilities and downstream waterway users were made. Group reviewed IAP and made adjustments to deal with the changing weather conditions.

1630 – GST Pumpload arrived Sector Houston staging area.

1700 - EPA issued CERCLA Order to Agrifos to prevent failure of stacks.

1700 – Agrifos commenced pumping. See the pump log enclosure (3).

1700 hrs, 12 Sept. 2007. The center of Tropical Storm Humberto was located 50 miles south of Galveston Texas. The storm track was drifting slightly to the west, but the winds had intensified. The new track would move the center of circulation just east of the facility. Tropical force winds were expected upwards of 60 miles for the storm's center. Intensification to hurricane status before landfall was expected.

Other references for this operational period: CG POLREP 8; IAP #5

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Thursday September 13, 2007

0005 hrs, 13 Sept. 2007. Just after midnight, Hurricane Humberto, continued to shift to a more northeastern track. The EPA FOSC requested a weather update. Just after midnight, a forecaster at the Houston Office of the National Weather Service provided an update that indicated only light precipitation was expected on Thursday, and that the winds would continue to clock around to the W by daylight with winds in the 10 to 15 knots range. Friday there was a chance of afternoon showers (40-50%) but the volume was thought to be relatively light, maybe as little as one tenth of an inch. Saturday and Sunday were expected to be relatively dry with only a chance on rain.

0205 – EPA OSC told Agrifos to cease pumping from stack ponds due to change in forecasted path of Hurricane Humberto further east. Controlled release continues from South Stack moats to bring moats levels down to prevent failure of moat wall and potential uncontrolled release of 25 million gallons.

0730 – Morning operations brief. 4,113,750 gallons pumped since pumps started last night. Now have 28” freeboard on pond #2 and 18” on pond #5 of South Stack; 12” freeboard on Stack #4 pond.

0800 – UC objectives meeting. Weather outlook significantly improved because of Humberto’s path eastward; however, storm could re-circulate and come back into gulf. Total water level is 13.6 million gallons lower, approximately 5 million in rain, so total release is between 17-19 million gallons overnight. Agrifos to provide a more exact number; they will also be conducting a new survey of the actual levels of the stack ponds so there may need to be a one-time adjustment made to the totals that are being tracked. EPA OSC emphasized that now that emergency (hurricane) has passed, the CERCLA Order will be the focus to get out of the critical phase (get some surge capacity to prevent catastrophic release of South Stack); emphasis will be on a more “normalized discharge” of 3-5 million gallons/day with maximum amount of gross pre-treatment possible; this release combined with maximum throughput of wastewater treatment plant will continue to work towards ending emergency.

1230 – CG/EPA released GST pump load to return to Mobile. Two GST personnel remain on scene to provide support.

1815 – CG received letter from EXXON-MOBIL in response to Coast Guard letter issued on the 11th (enclosure 2).

Other references for this operational period: CG POLREP 9; IAP #6

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Friday September 14, 2007

0730 – Operations brief

0800 – UC/General Staff meeting. Briefed on water level status; levels continue to drop; balance now 22.6 million with 27 inches freeboard in South Stack pond #2, 22.5 inches in pond #5, and 15 inches freeboard in Stack #4's pond. The 8" discharge line was secured at ~0200 but the 10" line remains discharging into the ditch from the pump station location next to moat #3. Estimated discharge amount from this line is 3.6 million gallons/day. Water sampling team is deployed to locate plume and conducted stratified sampling at outfall, downstream, and upstream. Sampling plan is developed and approved. RP's contractor, Benchmark, is engaged. Current estimated "burn" rate of wastewater is approximately 6.2 million gallons/day using the following means: 3.6 million gallons released to county ditch via 10" line; 1.2 million gallons/day processed by plant's treatment facility and discharged through permitted outfall; 800 thousand gallons used in plant fertilizer production process; and, 600 thousand gallons of naturally occurring evaporation.

Process Work Group continues to examine options to use process plant's wastewater system to treat and/or turn wastewater into fertilizer product. Lime slakers have been ordered to ensure supply to plant. Wall repair is ongoing of Moat #3 – the lower the water level gets the easier it will be to access and repair.

1500 – Planning meeting. Weather update – no change in clear forecast for next 3-4 days. Repair on wall seeps (11) was completed and the wall crew continues to monitor and address other areas in addition to repair of cofferdam area.. Wastewater treatment plant was off line for 6 hours to complete tie-ins for additional treatment/process options for long-term processing of water. Movement of water from moat #4 to #1 for treatment continues.

Traffic in ship channel is helping displace plume; readings are better than previous operational/sampling period. Midday meeting with Agrifos, FOSEC, and Ardaman engineers resulted in new estimate of wastewater that system needs to be reduced by to get out of critical phase; change is based on engineering estimation that 24 inches of freeboard is minimum necessary (not 30 inches as previously estimated) to give facility needed safety margin including some surge capacity in the event of a significant weather event. Original 50 million gallon estimate is now 39 million gallons; therefore, only 14.5 million gallons (not 22.6) remain to be dealt with to get out of critical emergency phase. Ardaman on-site survey is scheduled to be completed by 1200 on 15 September to verify this change.

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Saturday September 15, 2007

0730 – Operations brief

0800 – UC/General Staff meeting. Weather update – regional high will remain a positive influence until Friday. JIC support is available by phone. Liaison efforts continue to notify neighbors and develop emergency notification process in the event of a catastrophic release.

Water balance is now 11.4 million based on revised 39 million baseline. Ardaman is scheduled to start survey shortly. Release strategy will change significantly if survey confirms new baseline – 10” line will be secured and ponds will be rebalanced to optimize reserve within the moat/pond/stack system. Once discharge is discontinued, the adjusted “burn” rate will be approximately 2.6 million gallons/day, but the entire amount will be pretreated and released through permitted outfalls.

1400 – EPA OSC directed Agrifos to cease pumping from remaining line into ditch.

Survey results confirmed improving situation that will allow repairs to continue on moat walls and for Agrifos to start building pond/stack walls to gain storage capacity.

1500 – Planning meeting to review IAP (I was not present).

1630 – GST released by EPA and CG OSCs.

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Sunday September 16, 2007

0730 – Ops Brief.

0800 – UC Brief; Liaison reported that Emergency Plan is complete with procedures in place to notify neighbors; Agrifos will maintain 1 million gallon/hr capacity to pump in case of another significant weather event. Treatment, storage, disposal work group continues. Water monitoring and wall repair efforts continue. Plant continues to make modifications to be adaptable to all options identified. Operational period shifted to 72 hours.

0900 – GST departed for Mobile.

1600 – GST arrived home. Case Closed.